

a flexible tube; and
means for applying pressure to said tube through a pumping orbit from a static position out of squeezing contact with said tube to a position of squeezing contact with said tube.

3. (First amended) An ink jet system of claim 1 wherein said means for supplying ink to said reservoir independently of actuation by said reservoir comprises a duplex coupler having separable components.

4. (First amended) An ink jet system of claim 3 wherein said duplex coupler of said means for supplying ink to said reservoir independently of actuation by said reservoir comprises a first separable component inserted [completely] into a second component and locked in place.

12. (First amended) An ink jet system of claim 4 wherein said duplex [valve] coupler of said means for supplying ink to said reservoir independently of actuation by said reservoir comprises

a first coupling member inserted into a second coupling member and locked in place;

at least one of the coupling members contains a poppet that closes when biased forwardly to seal the fluid passageway through the coupling member containing said poppet.

13. (First amended) The method of operating an ink jet system, including the steps of:

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Intx*

(a) inserting one component of a two-component coupler in an ink reservoir; and

(b) inserting the other component of said two-component coupler into an [replaceable] ink bottle.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "the first separable component inserted completely into a second component" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Specification

This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Claim Objections

Claims 17-20 are objected to because of the following informalities: "grove" on line 10 of claim 17 should be "groove." Appropriate correction is required.

Claim Rejections - 35 USC Sec. 112

Claims 4 and 7-16 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 4 and 7-12:

The specification fails to describe "the first separable component inserted completely into a second component". As is clear from the specification and drawings neither the first nor the second element is completely inserted into the other. As best construed from the disclosure as a whole, the claims are considered with respect to the prior art as being directed to insertion to a point where front ends of the components abut one another and the components are locked in place.

Claims 13-16:

The specification fails to describe inserting the other component of the two-component coupler into a replaceable ink bottle.

Claims 2 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2:

It is unclear if the "means for applying pressure to said tube" is intended to be part of the "means for causing ink flow;" insertion of a colon following "comprises" and disposition of "a flexible tube; and" indented on a separate line are respectfully recommended where the "means for applying pressure to said tube" is intended to be an element of the "means for causing ink flow."

Claim 12:

"said duplex valve" lacks antecedent basis.

Claim Rejections - 35 USC Sec. 103

Claims 1-12 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niedermeyer et al. (US 5,343,226) in view of Ramacier, Jr. et al. (US 5,316.041) and Preszler (US 5,293,913).

Niedermeyer et al. teaches the claimed invention except the means for supplying ink to the reservoir independently of actuation by the reservoir.

Ramacier, Jr. et al. discloses a duplex connector consisting of a quick connect coupling valve assembly which facilitates fluid connection and disconnection without leakage. Note in particular Fig. 2 and, with respect to the fixed post limitation of claim 9, Figs. 23-24C.

Preszler teaches a means by which elements of a duplex coupler may be connected to an ink bottle and ink reservoir, i.e., by threaded connections.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the Ramacier, Jr. et al. duplex connector for the valve structure in the Niedermeyer et al. apparatus, where connections are provided as taught by Preszler, for the purpose of providing a valve assembly which facilitates quick fluid connection and disconnection without leakage.

The steps of the claimed method are deemed to be

clearly obvious in view of the functions of the structure in the combination discussed above.

Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niedermeyer et al. (US 5,343,226) in view of Ramacier, Jr. et al. (US 5,316,041), Preszler (US 5,293,913), and Ito (US 6,053,603).

The combination of Niedermeyer et al. in view of Ramacier, Jr. et al. and Preszler, as discussed above with regard to claims 1-12 and 17-20, applies also to claims 13-16. This combination suggests the claimed invention except the insertion of the other component into a bottle; the combination suggests that the other component be attached onto a bottle.

Ito discloses providing a pipe 40a which extends into a bottle as part of a connector which connects the bottle to an ink reservoir (see in particular Fig. 4(d)). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a pipe as taught by Ito extending from the other component for the purpose of facilitating connection of the other component to a bottle having a pierceable obstruction, including such well known obstructions as a foil or a rubber stopper.

Pertinent Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.